Mapping & Assessment Subcommittee Meeting

Minutes: March 11, 2004

Attendees: Don Falk, Alex McCord, John Mosier, Gene Trobia, Karl Siderits, Kirk Rowdabaugh, Kathy Hemenway

Location: County Supervisors Association, Phoenix

Future Meetings: **March 24:** ESRI Fire Specialist is speaking at the Phoenix Main Library. Gene will provide the details and Kathy will forward them to the mailing list. This talk is hosted by ESRI, the company known as "the Microsoft of GIS."

April 15: The subcommittee decided to meet from 1 to 5 pm at ASLD at 1616 W. Adams, Room 321. The purpose is to have a working session on user needs for the proposed data mapping system.

Action Items:

1. Kathy will work with Gene and Karl and others to identify relevant federal data standards that the system should conform to, and to address the issue of non-duplication of data entry. The purpose is to avoid a situation where federal personnel are faced with conforming to different standards (ours versus federal standards) and/or with having to duplicate data entry.

2. Kathy agreed to become the liaison to the Landscape Context Subcommittee.

3. Everyone agreed to starting thinking about and working on collecting user needs and requirements for the proposed data management system for fuels treatment data.[1] Karl will bring his staff to the meeting on April 15 to get their perspectives.

[1] Editorial Note: This topic was discussed at more length in the Governor's Forest Health Advisory Council meeting following the M&A subcommittee. It was agreed that needs and requirements should be gathered from the local partnership organizations, such as Greater Flagstaff Forests Partnership, Prescott Area Wildland Urban-Interface Commission, Natural Resources Working Group, and Regional Payson Area Project. Kathy agreed to pursue with Gene a process for gathering user needs from those groups.

Notes:

Map Exhibit: Kathy briefly reviewed plans for the Map Exhibit at the Governor's Forest Health Conference and Homeowner's Workshop.

ESRI Fire Specialist Talk on March 23. See "Future Meetings" above.

Report on NSF Letter of Intent. Barron wasn't able to attend this meeting due to an urgent problem that came up. He sent out in email an explanation of why the LOI wasn't completed. It is included in Appendix A here. Gene briefly described, based on his discussion with Barron, that in the short time frame that was available it wasn't possible to work through the social science issues that came up regarding how social scientists could appropriately study the real life decision-making of the people who would be doing their jobs using the proposed data management system. The grant would also be more focused on the social science issues than on infrastructure development.

M**ission & Goals:** We had a brief discussion of the draft Mission statement and revised it as follows:

The subcommittee will provide recommendations and guidance to the Governor's Forest Advisory Council and the State Forester regarding mapping and assessment. This will include recommendations regarding data format specifications for maps and the design and development of data repositories. This involves specifications and repositories intended to facilitate communication and coordination among decision-makers and the public regarding forest fuels treatments for wildfire hazard mitigation, wildland fire risk and hazard assessment, treatment monitoring, consideration of forest health in land-use planning and growth management, and forest health condition assessment.

The draft Mission statement and related notes that Kathy handed out to stimulate discussion are included in Appendix B.

Also, Kirk said he would pursue the topic with the Arizona Interagency Coordinating Group on March 12. Needs also should be gathered from the Governor's Councils, and other groups.

Demo of "Arizona Map" Prototype:

Summary

Gene presented a PowerPoint with slides showing the Arizona Map system. It is an ArcIMS (Internet Map Server) application under development by the State Cartographer's Office for the Homeland Security. Arizona Map can show, depending on user selected settings: hospitals, airports, schools, mile markers, roads, railroads, streams, 24K quads, 100K quads, 250K quads, lakes, census urbanized areas, cities, counties, wilderness areas, and surface management boundaries. Depending on the "zoom" level, certain features turn on and off.

Gene showed us how you can use it to zoom in to a community such as Flagstaff and see all the major roads. Gene suggested that we could clone the Arizona Map application and add in modules to support adding in and displaying treatment data. He suggested that we could use the application for mapping treatments, under two different scenarios: (1) We could allow users to download maps from the application and add in their treatment data using their local ArcView software, and then they could upload the data into the ArcIMS application; or (2) We could set up the ArcIMS application to allow users to draw treatment polygons onto it. Also, the application could be set up so that groups that already have cross-boundary treatment maps, such as Show Low and Flagstaff, can plug their data into the system.

We can't just piggyback onto the Arizona Map application, rather we would need to take the code (which is public domain), and set up our own application on an ArcIMS server. The reason is: Because Arizona Map is a Homeland Security application, it has high security and we would not be able to add treatment data into it. If we copy Arizona Map and make our own application, we will need to add in security features to allow users to add in data under password protection.

The PowerPoint demo of Arizona Map was very well received. Kirk remarked that it matches his vision of the proposed data mapping system for fuels treatments. The group discussed methods of gathering user needs information so that we can identify requirements for the system in order to determine how much funding we would need. When pressed, Gene said that setting up our application and making the modifications we would want would probably run us about $100,000 (based on rough estimates of similar projects), in addition to the costs of the ArcIMS software

and hardware. He said that one approach might be to find a shop to do the implementation, such as a university GIS shop, that is already running ArcIMS. He isn't confident of the price yet because a user needs assessment should be conducted to help determine costs associated with application development and adding logins and password protection for security related to data entry. Kirk wants us to get to the point of having requirements and a budget and he wants to pursue the topic of developing the application with people at the University of Arizona.

Detailed Notes

- Arizona Map was developed in collaboration with AGIC (Arizona Geographic Information Council) Homeland Security Committee using workshop attendee responses regarding needs. This was funded through part of a FEMA grant. The project involved determining who has what data and figuring out how the state could provide a framework so that local data can fit in and how data could be accessed by those who require it.

- Gene remarked that the state historically has little impact with regard to setting standards for counties. Basically, what happens is the state can make recommendations but the locals and counties develop systems based on their business needs. But Homeland Security and emergency response needs may change things because data conformance is important. The basic approach of the state is to say "If you want to use this system, here are the guidelines you need to use."

- When the issue was raised that NFPORS (National Fire Plan Operations and Reporting System) is not a geospatial database, Gene remarked that it does have an attached ArcIMS interface. Kathy noted that people entering data on projects can click on the topographic map to identify the locations of the projects. That causes the latitude and longitude to be recorded in NFPORS. Users such as the State Forester who have permission to access NFPORS via the web can get into the ArcIMS interface.

- Karl said that he spoke with Tom Beddow at Region 3 and Tom said that NFPORS is not likely to become truly geospatial any time in the near future. The Forest Service has not yet adopted a geospatial design. At present, NFPORS only tracks single latitude/longitude points for projects, and that is likely

how it will remain in the near term.

- Gene said that the Arizona Map uses USGS and BLM maps at the state level. The Arizona Map is modeled to be a state version of the USGS National Map.

- Gene said that the Arizona Map is being developed to be used by public safety personnel and is being tested by law enforcement. The reason they are the test audiences is that they have no GIS experience and they are they intended users, so they make good test subjects.

- Gene is sending out a survey to GIS people and emergency responders to find out what core data they would want in a system. The survey addresses topics such as: aerial photography/imagery, elevation, transportation, political boundaries, district boundaries, cadastral/land ownership, surface water, geodetic control, land cover, land use, geology, soils, critical infrastructure, and geographic names.

- Kirk asked whether people can submit data to the system in different formats. Gene said "no" but that shapefiles are an industry standard and so this should not be a problem. He also noted that there is an open standards web mapping services format that is evolving and it should diminish the problem within two to five years.

- Kirk noted that the federal agencies' position is that data should feed from our system into NFPORS. For example, Kirk asked whether the Tonto could enter data into our system and then it would automatically upload to NFPORS to avoid repetition. The answer is conceptually "yes," but we would need NFPORS to add in functionality to be able to receive the data. For general data items, it is straightforward. For geospatial referencing, Gene replied that he believes NFPORS is on the same base as the national map, so that there should be compatibility at that level. However, discrepancies in georeferenced locations can occur in the following way. Most localities in Arizona do not have their local data referenced to the national spatial reference system. They use Township, Range, and Section corners and other survey points that may not have geodetic control. By contrast the state uses the national spatial reference system. Many counties are in the process of adding GPS coordinates to section corners. It would be good if they fed those coordinates into the BLM database in order to align with the national spatial reference system. A few

counties have done this and some are undertaking it, but overall one can expect local data to have some discrepancy from national system. The discrepancy may be a few feet to dozens of feet or so. Kirk remarked that he doesn't expect discrepancies of that size to matter to fire personnel, and Gene agreed.

- Gene said that he has done joint projects with the Forest Service and BLM and that they have developed and shared data. One example is the development of compressed DOQQs for the state. The USGS was helpful in this regard.

- Gene noted that there will be benefit in using local data because it tends to be more detailed and may have parcel boundaries. For example, if we were to use Yavapai County data, then when a fire occurs we can tell whose property the fire is on.

- John remarked, regarding discrepancies, that people in Prescott are familiar with the discrepancies in the maps.

- Kirk asked whether, for treatment data, we can use a template for projects and collect data on specific attributes of our choice. Gene answered that we can design it any way we want.

- Gene noted that we could ask the University of Arizona to provide remote sensing data, and add it into the application. Don Falk remarked that integrating remote sensing into the GIS application would move things ahead dramatically. He would like to see soil condition, insect outbreak, and other overlays. It is a huge asset to integrate polygon data with remote sensing data. It was noted that Barron and Gene have similar goals in this regard.

- Kirk asked how we could set up an arrangement to work with a university such as U of A. He asked whether we would set up an Intergovernmental Agreement. Gene suggested talking with Barron Orr or Chuck Hutchinson. He said he has spoken with Chuck Hutchinson, who is someone we may want to consider partnering with and working with to find funding.

- With regard to data entry options, John and Gene were in agreement that gathering data locally and uploading is likely to be a better option than gathering the data on the web.

- Karl asked how secure the Arizona Map is, since it is a Homeland Security application. Gene said that locals who have ArcView can upload data to the State Cartographer's Office to be hosted on the application. He said that many emergency management organizations that provide data to the system want the data to be secured because they agreed with the locals they got the data from originally that it would not be shared.

- Gene and Kirk noted that using web-based GIS to support fire management should be pursued with Arizona Department of Emergency Management. They also talked about pursuing this with Frank Navarette.

- Kathy volunteered to take on an action item to pursue the issue of conformance with federal standards and the issue of non-duplication of data entry.

- Gene said that so long as we use a base map that is consistent with the national map, then there is a high likelihood of consistency with federal standards. He imagines that the national forests are consistent with The National Map.

- Gene raised a question as to whether we can get data out of NFPORS. Kathy remarked that NFPORS has a feature that allows you to dump data to an Excel pivot table. This is available to Kirk as a State Forester.

- The group determined that the next critical step is to identify user needs. They planned to meet on April 15 to work through user needs, and to work at gathering user needs in the meantime. See Footnote 1, page 1.

Landscape Context Subcommittee: Don Falk talked about the relationship of the Mapping & Assessment Subcommittee to the Landscape Context Subcommittee. He feels that the LC subcommittee should remain separate and complete the paper it is working on regarding thinking about wildfire risk and hazard mitigation at a larger spatial scale than that of the individual homeowner. After completing that paper, it may be appropriate for the LC subcommittee to join with the M&A subcommittee. Don feels that the interface between the two committees will revolve around requirements and design for the data management application we are talking about building. He remarked that the problem can't be solved piecemeal, and that we need to consider and plan for the involvement of land management agencies, land

use planners, and public officials. He said that it is the role of the LC subcommittee to raise these issues.

Meanwhile, the need for a liaison was identified, and Kathy agreed to serve that role.

Appendix A: Message from Barron Orr on NSF Letter of Intent – 3/11/04

All,

Major apologies, but a crisis has developed that I must address today -- I have to cancel my trip to Phoenix for the FH Mapping & Assessment Subcommittee meeting. Here is information on what Kathy asked me to talk about today. I would be grateful if you could bring this to the meeting so that everyone gets briefed.

I was to present today on the NSF Human and Social Dynamics (HSD) call for proposals which we entertained as a possible source for funds to develop a database infrastructure to:

a) address the fundamental data management and reporting needs outlined by Marty and Kathy
b) act as a data source and database repository for ForestERA and WALTER's FCS decision support systems
c) ultimately tie into the geographic data "framework" concept outline by Gene Trobia, serving natural resource management needs beyond wildfire applications.

The teams of programmers and social scientists I rounded up at the UA elected not to pursue this one -- at least not in this tight time frame -- for the reasons outlined below. However, they were very positive about the goals noted above and would like to explore other funding opportunities for a collaborative effort.

As you will see, the NSF HSD unfortunately was probably not an appropriate source funding source for our objectives. Aside from the very tight time line (March 3 for LOI, March 30 for full proposal), a maximum of six awards will be granted (very competitive) and the emphasis was far more on social/human dynamics *research* systems infrastructure than *management* systems infrastructure.

How did I reach this conclusion? Following our last meeting I organized two proposal writing exploratory meetings -- one with the programming team and a few social scientists and one with a team of social scientist with a few programmers. In both meetings the conclusion was the goal of the initiative was far more a system to study the behavior of decision makers (i.e. the people using the data) than to invest in make the system that would manage the data used for decision making.

I paste below text from NSF which puts this in their words.

> General NSF HSD Text
> NSF invites proposals for innovative research on human and social dynamics and related educational activities. The Human and Social Dynamics (HSD) priority area seeks to stimulate breakthroughs in knowledge about human action and development as well as organizational,

cultural, and societal adaptation and change. Research about human and social behavior is increasingly characterized by a focus on dynamics -- on how cognitive systems, individuals, formal and informal organizations, cultures, and societies evolve and change over space and time. Scientific understanding of the dynamics of mental processes, individual behavior, and social activity increasingly requires partnerships that span the different science and engineering research and education communities.

Infrastructure-focused Projects
Infrastructure-focused projects, which will provide critical resources for many different research communities and facilitate the conduct of human and social dynamics research and education. NSF will provide support for major activities to improve instrumentation and to develop data resources and other forms of infrastructure. The outcomes and products of infrastructure-focused projects should make significant, long-term contributions to research across a broad range of disciplines. NSF anticipates that most infrastructure-focused projects will range in duration from three to five years and have total award sizes ranging from $1,500,000 to $6,000,000.

Infrastructure-focused projects. NSF anticipates making 4 to 6 infrastructure-focused awards, each of which is related to the IDR emphasis area and at least one of the topical emphasis areas. These awards most likely will be made as continuing grants or as cooperative agreements.

Infrastructure-focused project proposals should include clear articulation of the research and education needs to which the activities are oriented; specification of how resources will be developed, maintained, and disseminated; and the contributions that each of the members of the project will make to the conduct of the activity. Proposals should also highlight educational components and, if relevant, international collaboration. Proposals should include specific suggested criteria for evaluation of the project at both intermediate and final stages of the grant as well as post-award plans for continuation or termination of the project. Proposals should also specify how the multidisciplinary communities will gain access to and otherwise be served by the proposed infrastructural development.

Due Dates
Letters of Intent (required): March 03, 2004
Full Proposal Deadline Date(s) (due by 5 p.m. proposer's local time): March 30, 2004

Appendix B: Notes for Discussion Handed out by Kathy Hemenway

Mapping & Assessment Subcommittee: Draft Mission Statement, Goals, and Notes

Draft Mission Statement

The subcommittee will provide direction for projects developing maps, data format specifications for maps, and geospatial data repositories for the purpose of facilitating communication and coordination among decision-makers and the public regarding forest fuels treatments for wildfire hazard mitigation, wildland fire risk and hazard assessment, treatment monitoring, and forest health condition assessment.

Draft Goals

Fuels treatment maps and data repository:

1. Needs assessment for fuels treatment maps and database

2. Format and content specifications for fuels treatment maps, including guidelines for local areas that address:

    - Legends (treatment classifications and inclusion/exclusion criteria, etc.)
    - Appearance features
    - Map-making logistics
    - Technical requirements for data integration and sharing

Notes

1. At the founding meeting (February 13), identifying questions that should be answered by the fuels treatment data repository was noted as a high priority. The need was further identified to stratify questions into near-term and long-term needs.
2. Should we note in the mission statement that we want to use standardized statewide base maps and conform to other relevant standards?
3. We will likely want to address funding opportunities and resources that we may be able to secure for implementing the data repository, as we are presently funding-limited and will naturally need to scale requirements to conform to funding limits.